U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

WATER SUPPLY OUTLOOK FOR MONTANA

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF OCTOBER 1, 1980

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SUMMARY OF 1980 WATER YEAR CONDITIONS

The snow season started late with very little snow accumulation prior to December. Soils under the snowpack were drier than normal. Snowfall improved during January but could not overcome early season deficiencies. Conditions did not change much during February. March snowfall was above average in most areas with April 1 snowpack reported at about 80 percent of average over most of the state's mountain watersheds.

Temperatures warmed to above normal in April with snowmelt occurring at most snow courses. Snowfall was also below average during April. These factors lowered the May 1 snowpack to about one-half of average in most areas. Runoff for April was above average due to the early melt, and runoff appeared to be two to three weeks earlier than normal.

The first half of May continued warm and dry with significant snowmelt occurring at all elevations. By mid-May a large percentage of the mountain watersheds were bare. Weather patterns reversed the last half of May and June with many areas in the western half of Montana reporting record or near record amounts of precipitation. Temperatures were generally cool. Major flooding was not a factor as the dry soils absorbed much of the heavy precipitation and much of the higher elevation precipitation fell as snow and melted later which spread the runoff over a longer period. This additional moisture helped alleviate some of the water shortages that were anticipated from the low snowpack. Throughout this entire period, eastern portions of the state remained dry. Frequent periods of precipitation in August and September had an adverse effect on harvesting of crops. Weather patterns for the entire water year were generally more abnormal than normal.

SNOTEL

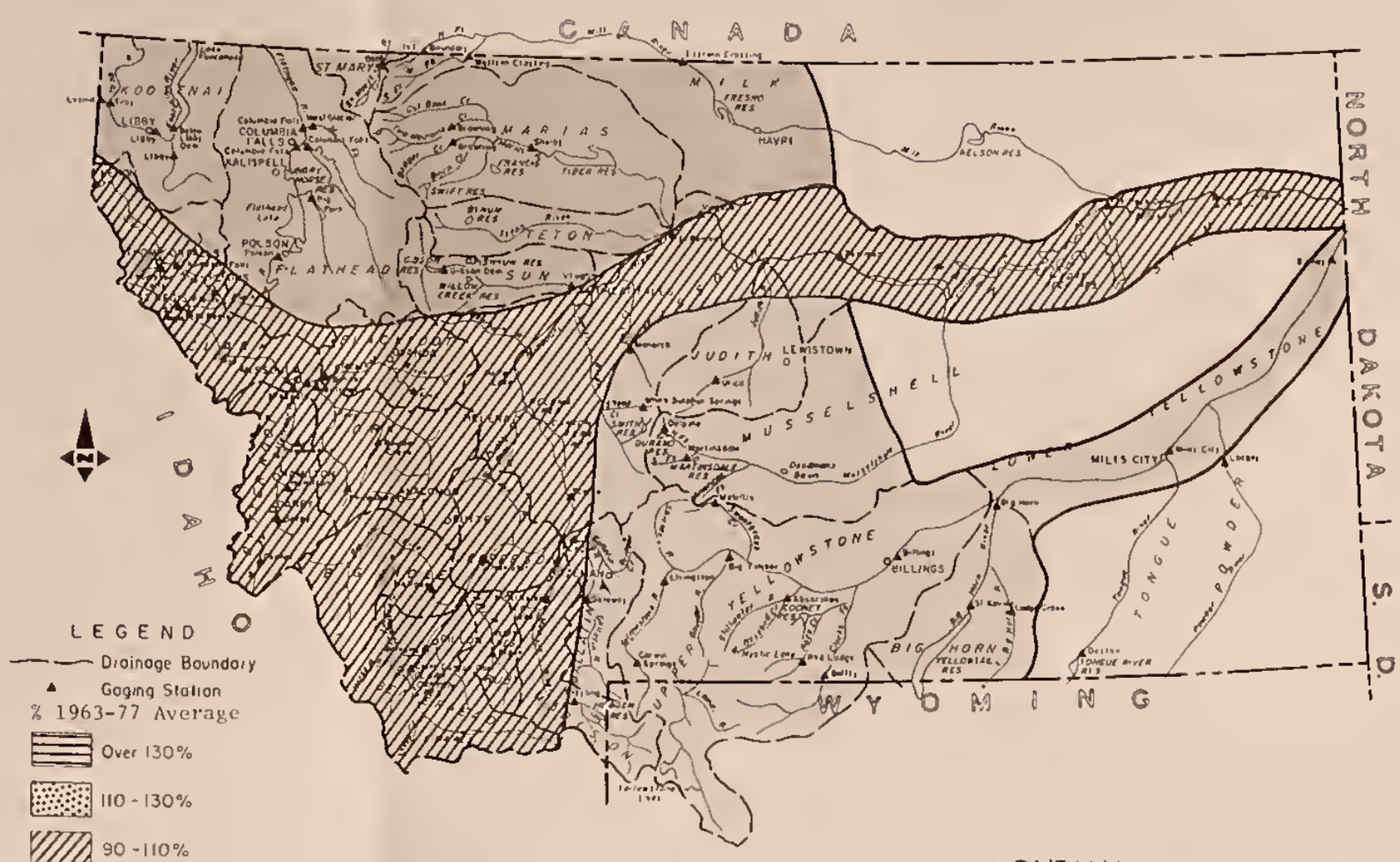
During the initial planning phase, Montana was authorized 63 of the 511 SNOTEL sites to be installed in the Western United States. On September 5, 1980 radio telemetry equipment was installed on the 63rd Montana site.

Currently all 63 SNOTEL sites are reporting data on snow water equivalent, total precipitation and air temperature twice daily. The early morning reading just before sunrise approximates the minimum daily temperature and the reading shorly after mid-day approximates the highest daily temperature.

Monthly precipitation will be reported in the "Water Supply Outlook" starting January 1, 1981.

Persons interested in obtaining near real-time data from SNOTEL should express their needs to:

Van K Haderlie
State Conservationist
Soil Conservation Service
P. O. Box 970
Bozeman, MT 59715



MONTANA
1980 APRIL - SEPTEMBER STREAMFLOW

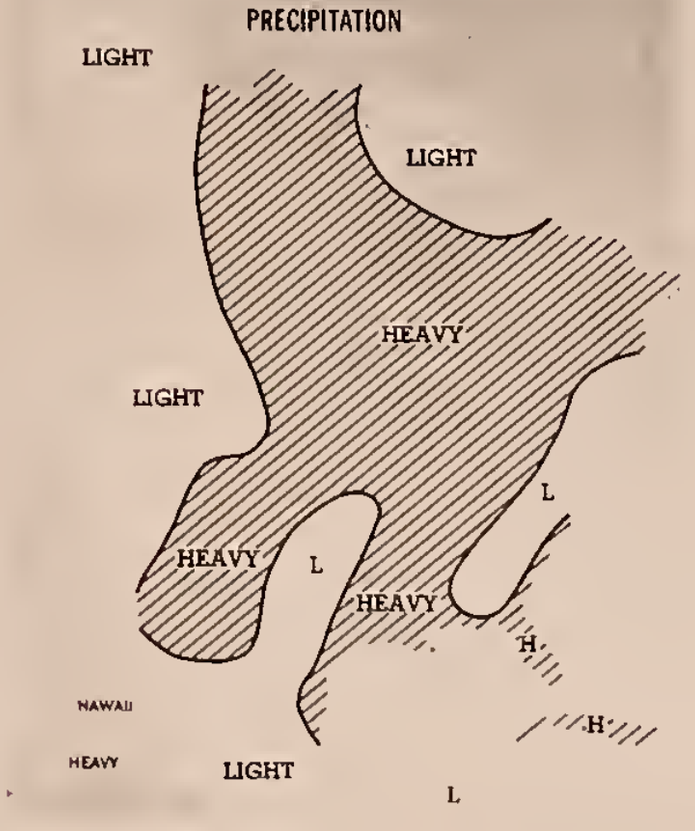
Based on Provisional Data provided by:
U. S. Geological Survey
Water & Power Resources Service
National Weather Service
Soil Conservation Service
and others

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH — SEPTEMBER

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage: This Year	Usable Storage: Last Year	Usable Storage: Average
	COLUMBIA				
Kootenai	Koocanusa	5,694.0	5,551.0	5,149.0	-
Flathead	Hungry Horse	3,428.0	3,213.0	2,914.0	3,162.0
	Flathead Lake	1,791.0	1,761.0	1,669.0	1,740.0
	Camas (4)	45.2	22.0	16.0	17.5
	Mission Valley (8)	100.3	21.9	25.6	27.3
Clark Fork	Georgetown Lake	31.0	30.9	27.8	28.3
	Lower Willow Creek	4.9	1.4	.6	1.1
	Nevada Creek	12.6	4.4	7.1	3.8
	Noxon Rapids	334.6	302.0	327.5	325.8
	MISSOURI				
Beaverhead	Lima	84.0	35.0	1.2	34.6
	Clark Canyon	257.2	147.7	112.4	118.0
Ruby	Ruby	38.8	15.2	-	13.3
Madison	Hebgen Lake	377.5	342.2	326.2	338.0
	Ennis Lake	41.0	38.1	36.6	36.2
Gallatin	Middle Creek	8.0	3.6	3.2	3.0
Missouri	Canyon Ferry	2,043.0	1,849.0	1,661.0	1,767.0
	Hauser & Helena	61.9	52.2	63.0	58.2
	Lake Helena	10.4	10.9	10.9	10.5
	Holter Lake	81.9	81.4	81.4	77.6
	Fort Peck Lake	18,910.0	15,940.0	17,150.0	16,690.0
Smith	Smith River	10.6	4.3	5.9	5.6
	Newlan Creek	12.4	-	8.7	-
Musselshell	Bair	7.0	3.4	4.4	3.1
	Martinsdale	23.1	9.2	9.8	9.9
	Deadman's Basin	72.2	43.3	46.4	35.3
Sun	Gibson	99.1	-	9.2	30.2
	Willow Creek	32.2	-	23.4	20.2
	Pishkun	32.0	-	20.2	19.0
Marias	Swift	30.0	13.2	6.5	13.0
	Lake Frances	111.9	81.3	68.5	68.8
Milk	Elwell (Tiber)	1,347.0	573.4	582.9	601.7
	Beaver Creek	3.5	-	3.0	1.7
	Fresno	127.2	36.3	55.1	74.2
	Nelson	66.8	23.2	45.6	43.4
	HUDSON BAY				
St. Mary's	Lake Sherburne	64.3	7.4	6.8	7.4
	YELLOWSTONE				
Stillwater	Mystic Lake	21.0	19.4	19.6	19.3
Clark's Fork	Cooney	27.4	12.3	-	13.1
Tongue	Tongue River	68.0	9.6	14.8	27.0
Bighorn	Bighorn Lake	1,356.0	1,080.0	996.3	679.7

Average based on 1963-77 period.

average monthly weather outlook



FOR MID-SEPTEMBER TO MID-OCTOBER 1980

PUBLIC MEETINGS

In the June 1, "Water Supply Outlook" we reported that a decision was expected from the Secretary of Agriculture in 4 to 8 weeks. So far there has been no information received from the Secretary on the future of the Snow Survey and Water Supply Forecasting Program.

We anticipate a decision will be forthcoming. Those who participated in the public review of the program and the news media will be advised when this information is released by the Secretary.

1980 Snow Cover Comparisons - Percent Average

DRAINAGE	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1
Columbia					
Kootenai	-	89	77	83	70
Flathead	64	75	71	81	64
Upper Clark Fork	43	68	69	81	44
Lower Clark Fork	81	82	70	79	61
Bitterroot	65	76	76	82	60
Missouri					
Jefferson	54	75	77	86	56
Madison	55	73	80	86	55
Gallatin	60	70	73	84	60
Missouri Main Stem	46	65	70	80	47
Marias-Teton-Sun	68	78	66	77	54
Judith- Musselshell	46	48	66	83	46
Milk	55	67	48	64	23
Saskatchewan					
St. Mary's	76	72	73	83	56
Yellowstone					
Yellowstone (above Bighorn)	55	69	77	86	59
Bighorn	-	72	83	93	59
Tongue	-	76	71	73	46
Powder	-	87	78	90	40

MOUNT ST. HELENS ASH

The effect of ash that was deposited on Montana watersheds on May 19, 1980 is being monitored. Many areas in western Montana have a significant residue that is now on the soil surface.

The ash layer remained on the surface of the snow until it melted and did not appear to dissolve with rainfall and snowmelt.

There is concern that this layer may impede the movement of water into the soil. If the infiltration rate is reduced to the point where all of the rainfall and snowmelt water cannot be absorbed into the soil, definite changes would occur in the hydrologic process. Most critical would be overland flow which could create a serious erosion problem and change the rate of runoff for a heavy precipitation or snowmelt event.